AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all prior listings, and all prior versions,

of claims in the application.

LISTING OF CLAIMS:

1.   (Currently Amended) A method for classifying defects, comprising:

obtaining a~~ defect image by taking a picture of~~ an image of a defect on

a sample;

extracting a characteristic ~~amount of defects from~~ of the defect from the

image;

classifying the defect in accordance with the extracted characteristic,

and based on a rule-based classification classifying the defect in accordance with

the extracted characteristic and based on a rule-based classification and a learning

type classification;

calculating a set of first likelihoods of the defect belonging to each of a

plurality of defect classes of the rule-based classification, by use of the extracted

characteristic;

calculating a set of second likelihoods of the defect belonging to each

of a plurality of defect classes of the learning type classification, by use of the

extracted characteristic;

calculating a third set of likelihoods of the defect belonging to each of

the defect classes of the learning type classification, by use of the first and second

likelihoods; and

classifying the defect by use of the third likelihoods~~preparing at least~~

~~one type of classification model which is a combination of rule-based classification~~

~~and learning type classification to calculate the likelihood that the extracted defects~~

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~~belong to a classification class by using information on the extracted characteristic~~

~~amount of the defects; and~~

~~classifying the defects of which characteristic amount is extracted by~~

~~the at least one type of classification model.~~

2.   (Currently Amended) The method for classifying defects according to Claim

1, wherein the ~~defect~~ image ~~obtained by taking the picture of the sample~~ is an SEM

image.

3.   (Currently Amended) The method for classifying defects according to Claim

1, wherein the defect image is obtained ~~by taking a picture of the sample which is~~

~~positioned with reference to~~ while the sample is positioned in accordance with

position coordinate data ~~on~~ of the defects ~~of~~ on the sample.

4.   (Currently Amended) The method for classifying defects according to Claim

1, wherein the plurality of classes of the rule-based classification ~~selects a particular~~

~~classification class set from previously provided plural classification~~ are selected from

class sets displayed on a display screen.

5.   (Currently Amended) The method for classifying defects according to Claim

1, wherein ~~a correlation among the previously determined classification classes, the~~

~~classes determined by using the teach data and the classes determined by using the~~

~~screen is analyzed in the step of generating the classification model to generate a~~

~~classification model comprising a combination of those classes~~ the third likelihoods

are calculated of by using a classification model comprising a relation of the classes

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of the learning type classification and the classes of the rule-based classification.

6.   (Currently Amended) The method for classifying defects according to Claim 1, wherein in the step of generating the classification model, the each classification model has a classification class, the class likelihood of the each classification class is calculated, the model likelihood about the adequacy of the each classification model is determined, and5, further comprising:

_____   generating a plurality of classification models;

_____   determining a likelihood of the adequacy of each classification model; and

_____   deciding a class likelihood is decided according to the determined model likelihood.

7 – 25.   (Cancelled).

26.   (New) An apparatus for classifying defects, comprising:

imaging means for obtaining an image of a defect on a sample;

means for extracting a characteristic of the defect from the image;

means for classifying the defect in accordance with the extracted characteristic, and based on a rule-based classification and a learning type classification, and

a display for displaying the image of the defect and the classification result on a screen;

wherein said classifying means comprises:

a rule-based classification apparatus for calculating a set of first

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likelihoods of the defect belonging to each of plurality of rule classes by use of the characteristics of the defect,

a learning type classification apparatus for calculating a set of second likelihoods of the defect belonging to each of a plurality of defect classes by use of the characteristic of the defect, and

a classification model for calculating a set of third likelihoods of the defect belonging to each of said defect classes, by use of the first and second likelihoods.

27. (New) The apparatus according to Claim 26, wherein said display is adapted for displaying a plurality of class sets on the screen, for selection of said rule classes.

28. (New) The apparatus according to Claim 26, wherein the classifying means includes a computing section for calculating a likelihood of the adequacy of each of a plurality of classification models and classifies the defects by using said likelihood of the adequacy of the classification models.

29. (New) The apparatus according to Claim 28, wherein the classifying means further includes a computing section for calculating said third likelihood and a model likelihood of the adequacy of the individual classification models to decide a class likelihood according to the model likelihood.

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